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辽西狼鳍鱼(Lycoptera)属一新种[1)]

张江永
(中国科学院古脊椎动物与古人类研究所 北京 100044)

摘要 记述了辽宁阜新县大五家子镇三吉窝铺的鱼化石。该鱼具有颞孔,前上颌骨小,上颌骨大,辅上颌骨 1 块,口缘有一行锥形齿,背鳍小于臀鳍,16 根分叉尾鳍条,尾下骨 7 块,尾上骨 1 块,尾神经骨 3～4 块。这些特征基本上是狼鳍鱼的定义特征,因此,应该属于狼鳍鱼属。阜新标本的第三眶下骨呈半圆形,不同于狼鳍鱼属各已知种。阜新标本的下颌长而低,在狼鳍鱼属中,只有三棵榆树狼鳍鱼和德永氏狼鳍鱼的下颌与之相似。但阜新的标本在具有 10 根胸鳍主要鳍条、16 根尾鳍分叉鳍条以及 1 块尾上骨方面不同于三棵榆树狼鳍鱼。与德永氏狼鳍鱼相比,阜新标本的第三眶下骨小、半圆形、后端不伸达前鳃盖骨的前缘,辅上颌骨较大,身体较宽。根据上述阜新标本的特征,建立狼鳍鱼属一新种——阜新狼鳍鱼。

关键词 辽宁阜新,早白垩世,狼鳍鱼

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1 前言

狼鳍鱼是中生代后期东亚地区特有的淡水鱼类,广布于我国北部水域中,为热河生物群的主要分子。该属最初由著名解剖学家 Müller (1848) 根据 Middendorff 采自西伯利亚外贝加尔地区的鱼化石所建立。我国狼鳍鱼的研究开始于 Sauvage (1880) 对 L'Abbe David 采自我国北方真骨鱼的研究,以后 Woodward (1901)、Reis (1910)、Grabau (1923,1928)、Cockerell (1925)、Makiyama (1927)、Hussakof (1932)、Saito (1936)、Takai (1943)、刘宪亭等 (1963)、张弥曼和周家健 (1976)、马凤珍 (1986,1987,1988)、张江永等 (1994) 和金帆等 (1995) 都对该类鱼化石做过研究。到目前为止,共命名了 19 个种 (*L. macrorhyncha* (Eichwald) 1846, *L. middendorffii* Müller 1848, *L. davidi* (Sauvage) 1880, *L. sinensis* Woodward 1901, *L. frox* Grabau 1923, *L. chosenensis* Makiyama 1927, *L. joholensis* Grabau 1928, *L. j. minor* Grabau 1928, *L. kansuensis* Grabau 1928, *L. woodwardi* Grabau 1928, *L. fragilis* Hussakof 1932, *L. tokunagai* Saito 1936, *L. muroii* (Takai) Liu et al. 1963, *L. longicephalus* Liu et al. 1963, *L. polyspondylus* Liu et al. 1963, *L. tungi* Liu et al. 1963, *L. lungteensis* Liu et al. 1963, *L. wangi* Gaudant 1965, *L. sankeyushuensis* Ma et Sun 1988)。

1998 年 6 月中国科学院古脊椎动物与古人类研究所在辽宁阜新县大五家子镇三吉窝铺村各么沟进行地质考察和化石发掘,在该剖面凝灰质粉砂岩中发现了大量的狼鳍鱼化石,其中一类标本和中华狼鳍鱼十分相似,另一类标本则和以往发现的狼鳍鱼属诸种均

1) 国家自然科学基金项目(编号:49832010)、国家自然科学基金委创新研究群体科学基金、国家重点基础研究发展规划项目(编号:G2000077700)、中国科学院创新工程重大项目(编号:KZCX3-J-03,KZCXZ-114-010307)资助。

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不相同,确立为一新种。在同一剖面上还发现有北票鲟、孔子鸟、昆虫、双壳类和植物化石。化石点地处金岭寺—羊山盆地东北缘,该区中生代地层过去被认为是九佛堂组(王五力等,1989),但汪筱林等(2000)认为这一地区的地层层序与北票四合屯地区义县组层序完全相同,应为义县组。

2 系统描述

真骨鱼亚纲 **Subdivision Teleostei Müller, 1846**

骨舌鱼超目 **Superorder Osteoglossomorpha Greenwood et al., 1966**

狼鳍鱼目 **Order Lycopteriformes Chang et Chou, 1977**

狼鳍鱼科 **Lycopteridae Cockerell, 1925**

狼鳍鱼属 *Lycoptera* **Müller, 1848**

阜新狼鳍鱼(新种) *Lycoptera fuxinensis* **sp. nov.**

(图 1～5)

正型标本 IVPP V 12437.1,一完整个体,右侧面保存(图 1A)。

归入标本 总计 18 块标本,其中 8 块保存完整(IVPP V 12437.2～18)。

词源 Fuxin-,化石产地辽宁阜新。

产地与时代 辽宁省阜新县大五家子镇三吉窝铺村,早白垩世义县组。

特征 额骨后端宽,前端尖。眶下骨 4 块,第三眶下骨略呈半圆形。口裂大,颌部与方骨的连接处位于眼眶后缘之后。上颌骨窄而长,后端几达颌部与方骨的关节处。齿骨窄长,前端变尖细。胸鳍长大,鳍条 I+8+I。腹鳍较小,鳍条 I+6。背鳍较小,鳍条 III～IV+7～8。臀鳍大于背鳍,鳍条 IV+14。脊椎 41～44 个。第一尾前椎上有一完整的神经棘和一短小的神经棘。第一末端尾椎上有一短小的神经棘。

描述 体呈纺锤形(图 1A～C),个体最小的体长为 35mm(V 12437.8),个体最大的体长约为 90mm(V 12437.3)。体长为体高的 3.48～3.75 倍,为头长的 4～4.1 倍,头长为头高的 1.2～1.33 倍,尾柄长为尾柄高的 1～1.25 倍。

颅骨 颅顶光滑(图 2,3)。鼻骨(V 12437.4)较大。中筛骨和吻骨未见。侧筛骨在 V 12437.4 标本上部分出露,形状不清。

额骨(图 1C,3)后端较宽,前端变尖,可能分开两鼻骨,额骨接线平直。眶上感觉管终止于顶骨中部。顶骨(图 1C,3)较大,略呈方形,下缘后部内凹,左、右顶骨在中线相接,接线平直。膜质翼耳骨(图 2)呈长条状。上枕骨在 V 12437.1,7,11 标本上有部分出露,形状不清,可能不分开顶骨。上耳骨观察不清。额外肩胛骨(V 12437.3)大,可见其上的感觉管。

副蝶骨横贯眼眶中部,腹面有锥形齿,前部 1 行,后部多于 3 行(V 12437.2A)。翼蝶骨(V 12437.1,3)略呈半圆形,左、右两块骨片是否分离难以观察。眶蝶骨(V 12437.1,3)呈半圆形,左、右两块骨片在腹面愈合,并向后伸出一细钩。在 V 12437.1 和 V 12437.3 标本上可见两块耳石的印痕。

围眶骨 眼眶较大,眼径约等于头长的 1/3。未见眶上骨。眶前骨(V 12437.1)略呈半圆形。眶下骨 4 块,第一、二眶下骨长条形(V 12437.1),约等长。第三眶下骨(V 12437.3,12)

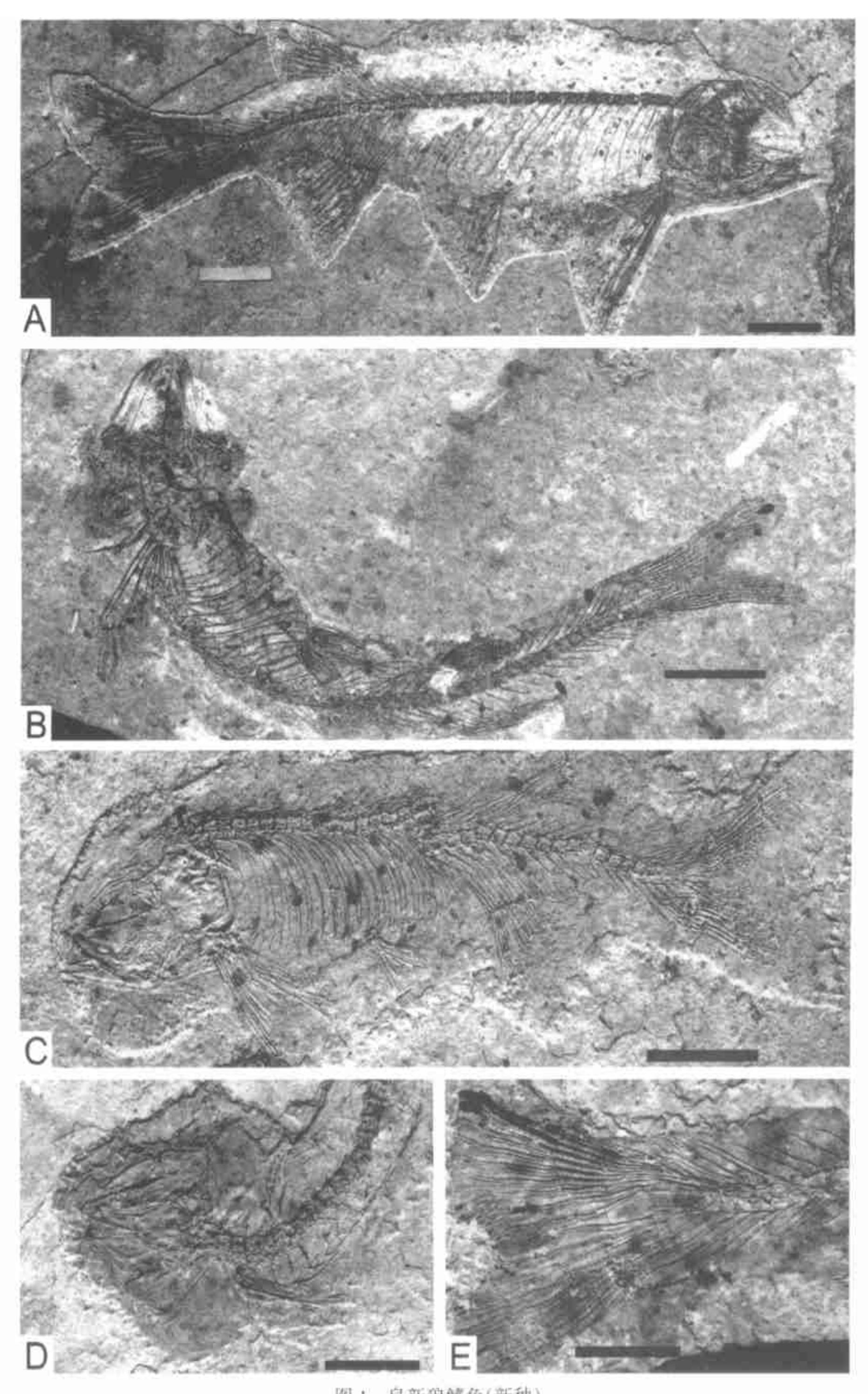


图1　阜新狼鳍鱼(新种)

Fig.1　*Lycoptera fuxinensis* sp. nov.

A～C.完整的鱼 complete specimens (A. V 12437.1; B. V 12437.2A; C. V 12437.5); D. 头骨背视 skull in dorsal view (V 12437.5); E. 尾骨骼 caudal skeleton (V 12437.18). 标尺 scale bar = 1cm

略呈半圆形(图 4A) **。第四眶下骨略呈长方形**(V 12437. 12) **。膜质蝶耳骨**(V 12437. 12) **较小。眶下管沿眼眶内缘通过,在第三眶下骨的中部有一短的分枝。**

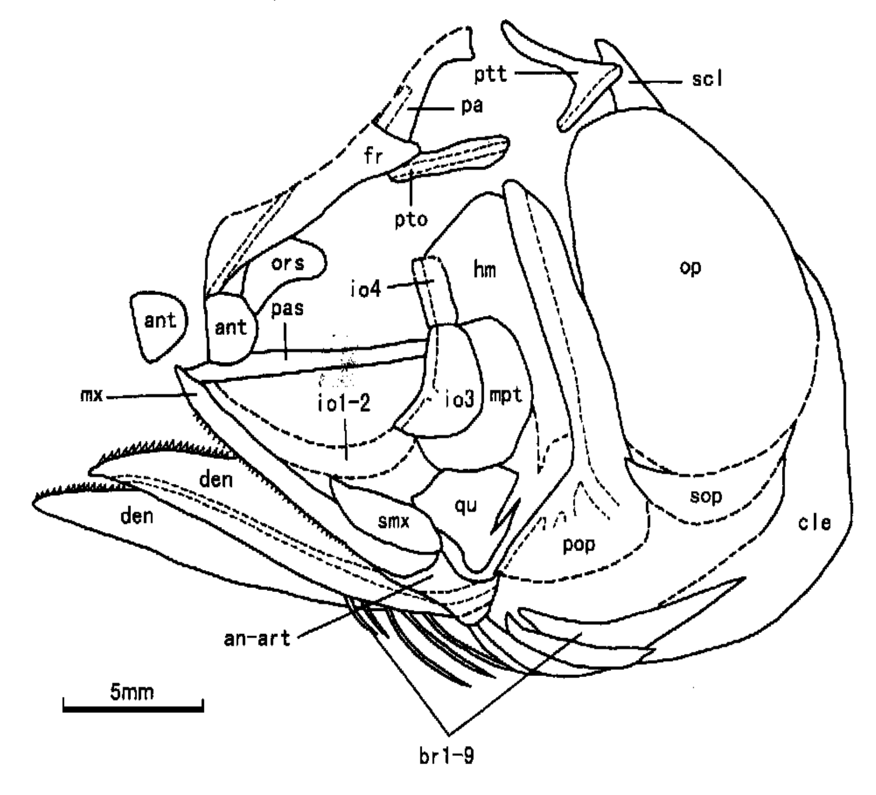


图 2　阜新狼鳍鱼(新种)头骨左侧视

Fig. 2　Skull of *Lycoptera fuxinensis* sp. nov. (V 12437. 3) in left lateral view

an-art, angulo-articular(**隅骨 - 关节骨**); ant, antorbital(**眶前骨**); br1～9, branchiostegals 1～9(**鳃条骨** 1～9); cle, cleithrum(**匙骨**); den, dentary(**齿骨**); fr, frontal(**额骨**); hm, hyomandibular(**舌颌骨**); io1～4, first to fourth infraorbitals (**眶下骨** 1～4); mpt, metapterygoid(**后翼骨**); mx, maxilla(**上颌骨**); op, opercle(**鳃盖骨**); ors, orbitosphenoid(**眶蝶骨**); pa, parietal(**顶骨**); pas, parasphenoid(**副蝶骨**); pop, preopercle(**前鳃盖骨**); pto, pterotic(**翼耳骨**); ptt, posttemporal(**后颞骨**); qu, quadrate(**方骨**); scl, supracleithrum(**上匙骨**); smx, supramaxilla(**辅上颌骨**); sop, subopercle(**下鳃盖骨**)

颌部　口裂大,颌部与方骨的连接处位于眼眶后缘之后,上、下颌口缘有一行小齿,其中以上颌骨上的为最小。前上颌骨小,前端有一三角形的升突。上颌骨窄而长(V 12437. 1) **,后端几达颌部与方骨的关节处,前端尖细,口缘的牙齿小于齿骨上的。辅上颌骨较大**(图 2) **,其宽度超过上颌骨的宽度。齿骨**(V 12437. 1) **窄长,前端变尖细。关节骨**(图 4B) **细长,与方骨的关节窝较大、较浅。后关节骨**(V 12437. 2A) **小,位于关节骨的后端。**

腭翼弓　腭骨观察不清。外翼骨呈细棒状,位于内翼骨和方骨的前侧,在 V 12437. 12 **上见有细齿。内翼骨**(V 12437. 9B) **三角形,后上部有小齿。后翼骨**(V 12437. 3, 5) **较大,半圆形。方骨**(V 12437. 3, 12) **扇形。**

舌弓　舌颌骨(V 12437. 9B, 12; 图 4C) **略向前倾斜,与脑颅连接的关节头为单头。关节突、鳃盖突和主干之间均有薄骨片相连,关节头和主干之间的薄骨片在主干下端向前下**

方伸出一突起。

远端角舌骨(V 12437. 9B ,12)双凹形,前端略小于后端。近端角舌骨(V 12437. 9B)半圆形。未见下舌骨和尾舌骨。基舌骨见于 V 12437. 3 标本上,齿较大。鳃条骨为 10 根,前面的几对纤细,后面的较宽大。喉板骨(V 12437. 3 ,9B)椭圆形,可见其上的同心纹。

鳃盖系统　鳃盖骨较大,椭圆形,有同心纹,以上缘和外缘的最为明显,内侧面光滑。前鳃盖骨下枝较短(V 12437. 3) ,上、下枝内缘交角大于 90 °,外侧缘有生长纹。感觉管沿上枝内缘及下枝上缘通过,在下枝有 3 个分枝。下鳃盖骨小,略呈新月形。间鳃盖骨略大,三角形。

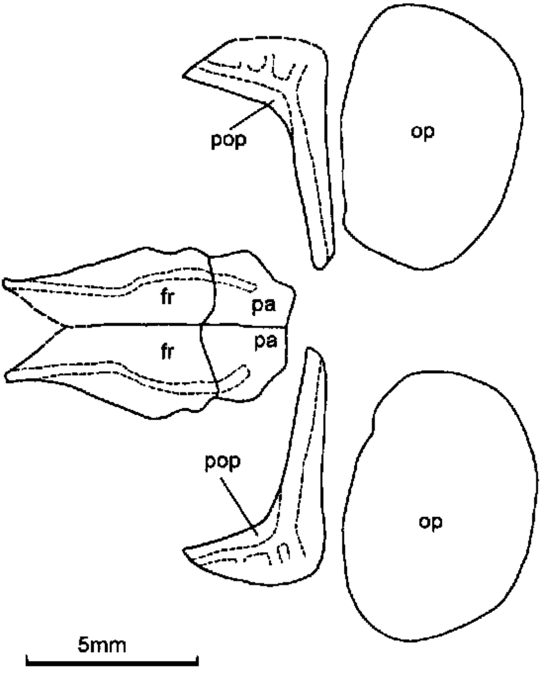


图 3　阜新狼鳍鱼(新种)头骨

Fig. 3　Skull of *Lycoptera fuxinensis* sp. nov. (V 12437. 5)

肩带和胸鳍　后颞骨(图 4D; V 12437. 7)叉形,上枝细长,下枝宽短。头部感觉管沿下枝通过。上匙骨(V 12437. 1)长条形,内侧缘平直、较厚,外侧缘圆弧状,感觉管沿其上端外缘通过。匙骨(V 12437. 9B)较大,上、下枝约等长,上枝上端变尖细。后匙骨(V 12437. 4)位于上匙骨和匙骨接合处的内侧。肩胛骨在 V 12437. 1 标本上有部分出露,肩胛孔较大。乌喙骨观察不清。V 12437. 1 标本上,可见两个结节状的胸鳍支鳍骨。

胸鳍(V 12437. 1 ,2A ,6)　位低、长大,后端伸达腹鳍起点,鳍条 Ⅰ+ 8 + Ⅰ,内、外侧各有 1 根只在远端分节而不分叉的鳍条,其余鳍条在远端分节分叉。

腰带和腹鳍　腰带较小,位于胸鳍起点和臀鳍起点的中点。基鳍骨(pelvic bone)为细棒状,在与鳍条连接处较粗大。腹鳍鳍条(V 12437. 2A ,6) Ⅰ+ 6。

背鳍和臀鳍　背鳍(V 12437. 1 ,2 ,7)较小,起点与臀鳍起点相对或略后。鳍条 Ⅲ～Ⅳ + 7～8。鳍条支持骨 10～11 根,第一根宽短,第二根最长,往后渐变短。间鳍骨呈短轴状。臀鳍(V 12437. 1 ,2)大于背鳍,鳍条 Ⅳ + 14,前面的 4 根不分叉鳍条中最长的 1 根在远端分节。远端间鳍骨(distal radials)颗粒状,近端间鳍骨(proximal radials)短轴状。鳍条支持骨 15～16 根。

脊柱　脊椎(V 12437. 1 ,2 ,4) 41～44 个,其中躯椎 20～23,尾椎 21 个。椎体骨化,呈筒状,中部略收缩,外侧有纵纹。椎体横突(V 12437. 5)较小。肋骨 18～19 对,第一对肋骨(V 12437. 7)较短,只有第二对肋骨长的一半,最后一对肋骨也较短。脉弓从前往后逐渐变短。脊索穿孔较大(V 12437. 1) 。背鳍前的神经弧不愈合。上神经棘较小,前面的几个不显著增大。上髓弓小骨纤细。

尾骨骼和尾鳍　尾骨骼(图 1E ,5 ;V 12437. 2 ,18)和一般原始真骨鱼类相似。从第五

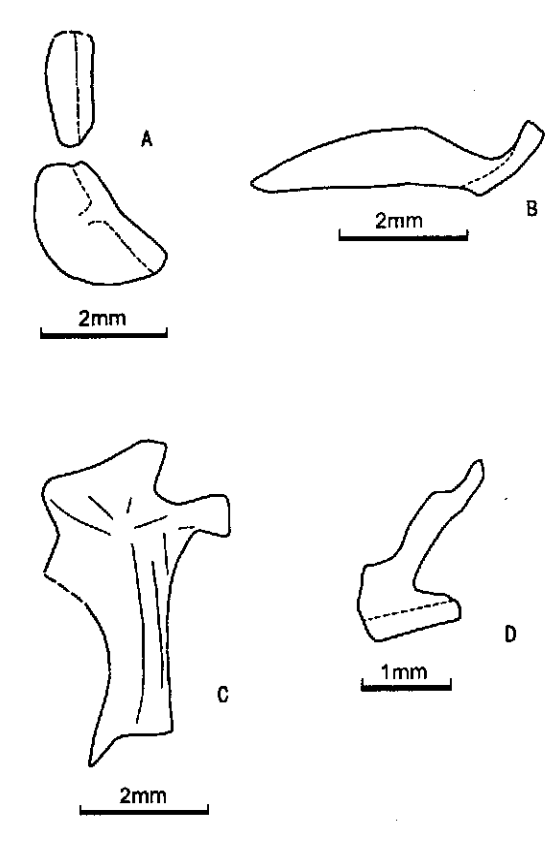


图 4　阜新狼鳍鱼(新种)部分头部骨骼

Fig. 4　Some cranial bones of *Lycoptera fuxinensis* sp. nov.

A. 第三和第四眶下骨 the third and the fourth infraorbitals; B. 关节骨 articular; C. 舌颌骨 hyomandibular; D. 后颞骨 posttemporal

尾前椎开始,椎体往后逐渐变小。有 4～5 根脉棘和神经棘向后延长支持尾鳍,其中脉棘往后逐渐加宽。第一尾前椎(V 12437. 18)上有一完整的神经棘和一短小的神经棘。第 1～3 尾前椎的脉弧上有一前突,每一突起与前面的脉弧相接。在大多数标本上,第一末端尾椎比第一尾前椎略长。在 V 12437. 1 标本上,第一末端尾椎由两块还没有愈合的尾椎组成。第一末端尾椎(V 12437. 16, 18)上有一短小的神经棘。第二末端尾椎较小,略呈三角形,其上没有发现神经棘。

尾下骨 7 块。第一尾下骨最大,基部有一向前的突起。第二尾下骨比第一尾下骨略小。第一、二尾下骨与第一末端尾椎相连,第 3～4 尾下骨与第二末端尾椎相连,第 5～7 尾下骨游离。

尾上骨 1 块(V 12437. 3, 18)。尾神经骨 4 根(V 12437. 6, 18),第 1 根往前伸达第二尾前椎的中部,第 2 根伸达第一尾前椎的前缘,第 3 根伸达第一末端尾椎的前部,第 4 根较短。

尾鳍深分叉(V 12437. 1),鳍条 Ⅰ+16+Ⅰ,上、下叶各约有 16 根辅助鳍条,其中较长的 3 根辅助鳍条远端分节。

鳞　圆鳞(V 12437. 3, 18),有细密的同心生长纹,基区有辐射沟,可达 15 个。

3　比较和讨论

阜新的标本具有颞孔,前上颌骨小,上颌骨大,辅上颌骨 1 块,口缘有一行锥形齿,背鳍小于臀鳍,16 根分叉尾鳍条,尾下骨 7 块,尾上骨 1 块,尾神经骨 3～4 块。这些特征基本上是狼鳍鱼的定义特征,因此,阜新的标本无疑属于狼鳍鱼属。

阜新标本的第三眶下骨呈半圆形,不同于狼鳍鱼属各已知种。阜新标本的下颌长而低,在狼鳍鱼属中,只有三棵榆树狼鳍鱼(*Lycoptera sankeyushuensis*)和德永氏狼鳍鱼(*Lycoptera tokunagai*)的下颌与之相似。但阜新的标本在以下几个方面不同于三棵榆树狼鳍鱼:胸鳍主要鳍条 10 根(三棵榆树狼鳍鱼胸鳍主要鳍条 9 根),尾鳍分叉鳍条 16 根(三棵榆树狼鳍鱼 15 根),尾上骨 1 块(三棵榆树狼鳍鱼无尾上骨)。与德永氏狼鳍鱼相比,阜新标本的第三眶下骨小、半圆形、后端不伸达前鳃盖骨的前缘,辅上颌骨较大,身体较宽。根

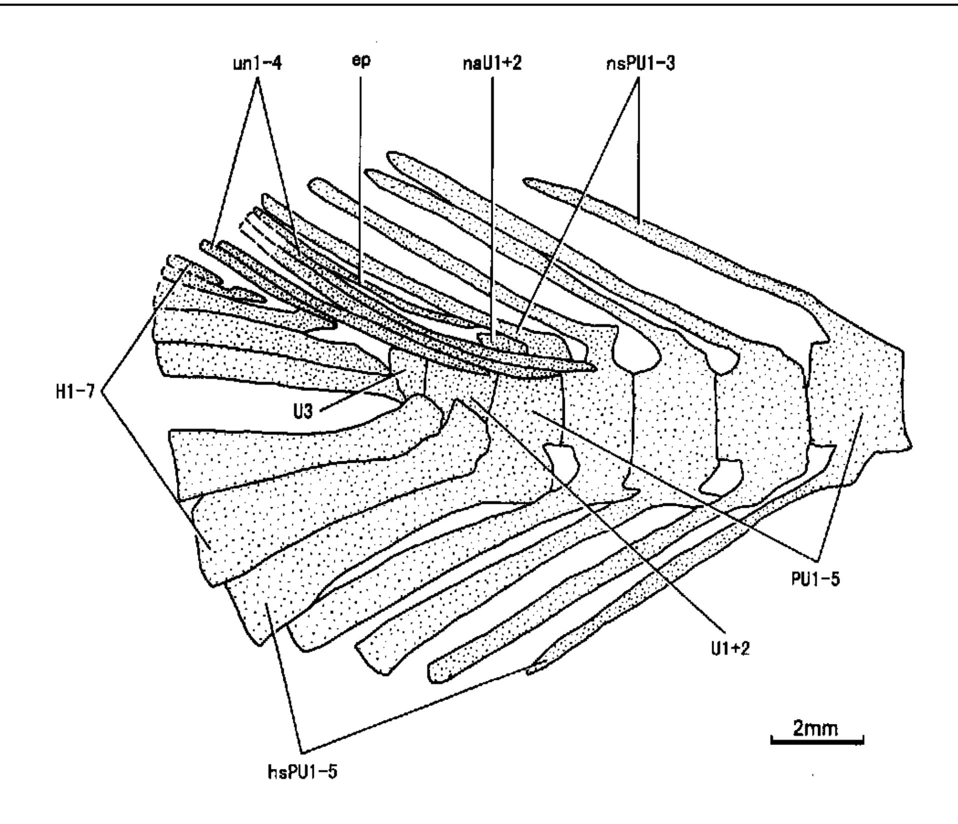


图 5 阜新狼鳍鱼(新种)的尾骨骼

Fig. 5 Caudal skeleton of *Lycoptera fuxinensis* sp. nov. (V 12437.18)

ep, epural(**尾上骨**);H1～7, hypurals1～7(**第 1～7 尾下骨**);hsPU1～5, haemal spines on PU1～5(**第 1～5 尾前椎上的脉棘**);naU1 + 2, neural arch on U1 + 2(**第一末端尾椎**(U1 + 2)**上的神经弧**);nsPU1～3, neural spines on PU1～3(**第 1～3 尾前椎上的神经棘**);PU1～5, preural vertebrae 1～5(**第 1～5 尾前椎**);U1 + 2, ural centra 1 + 2(**第一末端尾椎**);U3, ural centrum 3(**第二末端尾椎**);un1～4, uroneurals1～4(**第 1～4 尾神经骨**)

据上述阜新标本的特征,建议建立狼鳍鱼属一新种——阜新狼鳍鱼(*Lycoptera fuxinensis* sp. nov.)。

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A NEW SPECIES OF LYCOPTERA FROM LIAONING, CHINA

ZHANG Jiang-Yong

(*Institute of Vertebrate Paleontology and Paleoanthropology, Chinese Academy of Sciences* Beijing 100044)

Key words Fuxin, Liaoning, Early Cretaceous, *Lycoptera*

Summary

Lycoptera is an important member of the Jehol Biota and has its distribution only in Eastern Asia. In 1998, fish materials were found in the Yixian Formation at a new fossil locality near Fuxin City, Western Liaoning, China. The third infraorbital of the new fish is semicircular, which is different from that in all other species of the genus. The mandible of the fish is long and low, very peculiar in the genus. Therefore, a new species is proposed for the Fuxin specimens-*Lycoptera fuxinensis* sp. nov.

Subdivision Teleostei Müller, 1846
Superorder Osteoglossomorpha Greenwood et al., 1966
Order Lycopteriformes Chang et Chou, 1977
Lycopteridae Cockerell, 1925
Lycoptera **Müller, 1848**
Lycoptera fuxinensis **sp. nov.**
(Figs. 1～5)

Holotype IVPP V 12437.1, a complete specimen in right lateral view (Fig. 1A).

Other materials 18 specimens, among which 8 are complete (IVPP V 12437.2～18).

Etymology Fuxin-the name of the city nearest to the fish locality.

Locality and horizon Sanjiwopu, Dawujiazi, Fuxin, Liaoning, China; Yixian Formation, Early Cretaceous.

Diagnosis A species of *Lycoptera* with the following characters: posterior end of the frontal broad and anterior end of the bone narrow, infraorbital bones four, the third nearly semicircular, mouth gape large, maxilla and dentary long and low, pectoral fin large and long, with Ⅰ+8+Ⅰ fin rays, pelvic fin small, with Ⅰ+6 fin rays, dorsal fin relatively small, with Ⅲ～Ⅳ+7～8 fin rays, anal fin larger than dorsal, and with Ⅳ+14 fin rays, vertebrae 41～44, a full and a short neural spine on the first preural centrum, a short neural spine on the first ural centrum (U1+2).

Description The body of the fish is fusiform, with a standard length ranging from 35 (V 12437.8) to 90 mm (V 12437.3). The standard length is 3.48～3.75 times of the body depth, 4～4.1 of the skull length. The length of the skull is 1.2～1.33 times of the height. The length of the caudal peduncle is 1～1.25 times of the height.

The skull roof is smooth. The nasal is relatively large. The lateral ethmoid can be partially seen in specimen V 12437.4, but its shape is unclear.

The frontal is broad at its posterior end and pointed at its anterior end. The interfrontal suture is straight. The supraorbital canal runs to the mid-part of the paritetal. The parietal is large and flat, approximately square in outline, but with a concave on its posterolateral margin. The parietals meet along the midline. The pterotic is long. The supraoccipital is only partially shown in specimen V 12437.1, but the shape is unclear. The extrascapula is large.

The parasphenoid bears very strong teeth. The bone has one row of small teeth anteriorly, and more than three rows of teeth posteriorly. The pterosphenoid is nearly semicircular in shape. The orbitosphenoid is semicircular.

The orbit is relatively large. The supraorbital is absent. The antorbital is nearly semicircular. Four infraorbitals are present. The first and the second are long; the third is nearly semicircular; the fourth is about rectangular. The dermosphenotic is small. The infraorbital canal runs along the orbital margin and gives off one short branch in the infraorbital 3.

The mouth gape is large. Small teeth are present on mouth margin. The premaxilla is small, with an ascending process at its anterior end. The maxilla is long and narrow and its posterior end levels with the quadrate-mandibular articulation. The supramaxilla is relatively large. The dentary is long and low. The retroarticular is small.

The ectopterygoid is a slender and rodlike bone. The entopterygoid is triangular in shape. The metapterygoid is large and nearly semicirclar in outline. The quadrate is fanlike.

The hyomandibular is inclined forwards, with a thin, broad wing anteriorly and a narrow wing posteriorly. Dorsally the bone articulates with the cranium by one head.

The anterior ceratohyal is concave in both its dorsal and ventral margins. The posterior ceratohyal is semicircular. The basihyal is covered with strong teeth. Ten branchiostegals are present. The posterior ones are broad, while the anterior ones are thin and hairlike. The gular plate is elliptic.

The opercle is nearly oval. The horizontal limb of the preopercle is shorter than the vertical one. The preopercular sensory canal bears three branches on its ventral limb. The subopercle is small. The interopercle is relatively large.

The posttemporal is a forklike bone with a long and slender dorsal limb and a short and broad ventral limb. The lateral line runs along the ventral limb of the bone. The supracleithrum is a long, flat bone, with the lateral sensory canal crossing through its upper end. The cleithrum is large and its horizontal part is as long as the vertical arm. The postcleithrum is small and lies medial to the joint between the supracleithrum and cleithrum. The scapula is partially seen in the specimen V 12437.1 and the scapular foramen is relatively large.

The pectoral fin is large, reaching to the origin of the pelvic fin. The pectoral fin contains Ⅰ + 8 + Ⅰ rays.

The pelvic girdle is small and lies at the midpoint between the pectoral and anal fins. The pelvic bone is rodlike with an enlarged posterior end. The pelvic fin rays counted Ⅰ + 6.

The dorsal fin is small, with Ⅲ～Ⅳ+ 7～8 rays and 10～11 pterygiophores. The anal fin is larger than the dorsal fin, with Ⅳ+ 14 fin rays and 15～16 pterygiophores.

There are 41～44 vertebrae, of which 21 are caudals. Each centrum is well ossified and pierced by a large opening for the notochord. The parapophyses are short. 18～19 pairs of pleural ribs can be counted. The neural arches anterior to the dorsal fin are autogenous and are paired elements. The supraneurals are slender. The epineurals are long, fine, and rodlike bones.

The preural vertebrae gradually become smaller in size posteriorly from the fifth preural centrum to the first preural centrum. As many as 4～5 neural and haemal spines are involved in the support of the caudal fin rays, of which the haemal spines become gradually thickened from the one on the fourth preural centrum to the parhypural. The first preural centrum has a full and a short neural spines. A short neural spine is present on the first ural centrum. The second ural centrum is small and triangular in shape, with no neural spine.

There are seven hypurals. Hypural 1 is the largest and hypural 2 is shorter and smaller. The first two hypurals are articulated with the first ural centrum, and hypurals 3 and 4 with the second ural centrum, while the hypurals 5～7 are free.

The epural is long and slender. Four uroneurals are present, with the first reaching forward to the preural centrum 2, the second to the anterior margin of preural centrum 1, and the third to the anterior margin of the "first" ural centrum. The fourth uroneural is short.

The caudal fin is deeply forked, with Ⅰ + 16 + Ⅰ principal fin rays and 16 procurrent rays in both its upper and lower lobes.

The cycloid scales are round and thin, with circulii around the focus.

Discussion The new specimens from Fuxin have the following diagnostic features of *Lycoptera* fish: temporal fenestra present, premaxilla small and maxilla large, supramaxilla one in number, a single row of conical teeth present in the oral margin, dorsal fin smaller than anal fin, branched caudal fin rays 16 in number in most specimens, and the number of hypural, epural, and uroneural 7, 1, and 3～4 respectively. Therefore, they are referred to the genus *Lycoptera*. The third infraorbital of the new fish is semicircular, which is different from that in all other species of the genus. The mandible of the new fish is long and narrow, which is shared only with *Lycoptera sankeyushuensis* and *L. tokunagai* in the genus. The new fish differs from *L. sankeyushuensis* in that it has

10 principal pectoral fin rays (9 in the latter), 16 branched caudal fin rays (15 in the latter), and one epural (no epural in the latter). The specimens from Fuxin can be distinguished from *L. tokunagai* in that: 1) it has a small and semicircular third infraorbital, while this bone in *L. tokunagai* is large and reaches to the front margin of preopercle; 2) the supramaxilla in the new fish is relatively large, but very small in *L. tokunagai*; 3) the shape of the body of the new fish is not as narrow as that in *L. tokunagai*. Based on these comparisons, a new species for the Fuxin specimen-*Lycoptera fuxinensis* sp. nov. is proposed in this paper.

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